

Claims:

1. A method for deriving representations of the individual outcomes of launching objects into an area that contains a plurality of mutually-spaced object-sensing means, wherein each sensing means detects the presence of any of the launched objects that arrive in the location of that respective sensing means, a prediction of the outcome of the launching of each individual object is computed in dependence upon measurements of velocity vectors of that object at launch, the prediction is used to provide representation of the outcome of the launch of that respective object in the event that the presence as aforesaid of that object is not detected by the sensing means, and the computation process by which the predictions are computed is subject to adaptive correction in dependence upon error between the outcome predicted and the actual outcome realised in respect of individual objects for which the presence as aforesaid is detected by any of the sensing means.
2. A method according to Claim 1 wherein the representation provided in respect of the individual objects for which the presence as aforesaid is detected by any of the sensing means, is of the actual outcome realised.
3. A method according to Claim 1 or Claim 2 wherein the measurements of velocity vectors of each object at launch are derived by detecting light-change resulting from passage of that object through detection planes defined by respective slit-apertures.
4. A method according to Claim 3 wherein each detection plane involves means for emitting light as a beam through the respective slit-aperture and means for sensing light from the beam reflected back through that same slit-aperture.
5. A method according to Claim 4 wherein each object carries one or more retro-reflective elements for reflecting light from the beam back to the light-sensing means.

6. A method according to any one of Claims 1 to 5 wherein the sensing means each detect the presence as aforesaid of each said object by impact of that object within the respective location.
7. A method according to Claim 6 wherein each sensing means involves piezo-electric cabling for sensing impact.
8. A method according to Claim 7 wherein each sensing means includes a plurality of piezo-electric cables, and the position of the impact within the location of the respective sensing means is derived from electric signals produced in the respective cables in response to the impact.
9. A method according to any one of Claims 1 to 8 wherein each said object carries a radio-frequency identification tag and the sensing means each include radio-frequency means for detecting the presence as aforesaid of each said object.
10. A method according to any one of Claims 1 to 9 wherein the derived representations are provided in the form of video display.
11. A method according to any one of Claims 1 to 10 wherein the objects are golf balls that are launched by a golfer in successive strikes.
12. A method according to Claim 11 wherein the prediction of the outcome of launching of each individual ball is computed in accordance with velocity and spin vectors of the ball at launch.
13. A method according to Claim 11 or Claim 12 wherein the predicted outcome is represented in terms of the location the ball is predicted to reach within the area.

14. A method according to any one of Claims 11 to 13 wherein the area is a golf range used by a plurality of golfers, and each golfer is provided individually with a representation of the outcome of his/her strikes.

15. A method according to Claim 14 wherein possible ambiguity in relating actual outcome with predicted outcome in respect of balls from different golfers is resolved on the basis of a probability assessment.

16. A system for deriving representations of the individual outcomes of launching objects into a defined area, comprising a plurality of mutually-spaced object-sensing means within the defined area, each of the sensing means being operative to detect the presence of any of the launched objects that arrive in the location of that respective sensing means, launch-analyser means for deriving measurements of the launch velocity vectors of each of the objects individually, computer means for computing in dependence upon these measurements a prediction for the respective object of the outcome of its launch, and means for providing representation of the computed prediction in the event that the presence as aforesaid of the respective object is not detected by the sensing means, and wherein the computation process by which the predictions are computed by the computer means is subject to adaptive correction in dependence upon error between the outcome predicted and the actual outcome realised in respect of individual objects for which the presence as aforesaid is detected by any of the sensing means.

17. A system according to Claim 16 wherein the representation provided in respect of the individual objects for which the presence as aforesaid is detected by any of the sensing means, is of the actual outcome realised.

18. A system according to Claim 16 or Claim 17 wherein the measurements of velocity vectors of each object at launch are derived by detecting light-change resulting from passage of that object through detection planes defined by respective slit-apertures.

19. A system according to Claim 18 wherein each detection plane involves means for emitting light as a beam through the respective slit-aperture and means for sensing light from the beam reflected back through that same slit-aperture.
20. A system according to Claim 19 wherein each object carries one or more retro-reflective elements for reflecting light from the beam back to the light-sensing means.
21. A system according to any one of Claims 16 to 20 wherein the sensing means each detect the presence as aforesaid of each said object by impact of that object within the respective location.
22. A system according to Claim 21 wherein each sensing means involves piezo-electric cabling for sensing impact.
23. A system according to Claim 22 wherein each sensing means includes a plurality of piezo-electric cables, and the position of the impact within the location of the respective sensing means is derived from electric signals produced in the respective cables in response to the impact.
24. A system according to any one of Claims 16 to 23 wherein each said object carries a radio-frequency identification tag and the sensing means each include radio-frequency means for detecting the presence as aforesaid of each said object.
25. A system according to any one of Claims 16 to 24 wherein the derived representations are provided in the form of video display.
26. A system according to any one of Claims 16 to 25 wherein the objects are golf balls that are launched by a golfer in successive strikes.

27. A system according to Claim 26 wherein the prediction of the outcome of launching of each individual ball is computed in accordance with velocity and spin vectors of the ball at launch.
28. A system according to Claim 26 or Claim 27 wherein the predicted outcome is represented in terms of the location the ball is predicted to reach within the area.
29. A system according to any one of Claims 26 to 28 wherein the area is a golf range having a plurality of bays for occupation by a plurality of golfers respectively, and each bay has means for providing a representation of the outcome of strikes from that bay.
30. A system according to Claim 29 wherein possible ambiguity in relating actual outcome with predicted outcome in respect of balls from different golfers is resolved on the basis of a probability assessment made by the computer means.
31. A method for deriving representations of the individual outcomes of launching golf balls, substantially as hereinbefore described with reference to the accompanying drawings.
32. A system for deriving representations of the individual outcomes of launching golf balls, substantially as hereinbefore described with reference to the accompanying drawings.